

CLAIMS

1. A dental composition comprising:

(1) at least one crosslinkable and/or polymerizable silicone oligomer or polymer which is liquid at room temperature or which is heat-melttable at a temperature of less than 100°C, and which comprises:

- at least one unit of formula (I):

$$Z-\text{Si}-\overset{\circ}{(\text{R})_a}-\text{O}_{(3-a)/2}$$

10 in which:

- a = 0, 1 or 2,
- R⁰, identical or different, represents an alkyl, cycloalkyl, aryl, vinyl, hydroxyl or alkoxy radical, preferably a C₁-C₆ lower alkyl,
- Z, identical or different, is an organic substituent comprising at least one reactive epoxy, and/or alkenyl ether and/or oxetane and/or dioxolane and/or carbonate functional group,
- and at least two silicon atoms,

(2) at least one dental filler present in a proportion of at least 10% by weight relative to the total weight of the composition,

(3) and an effective quantity of at least one organometallic complex borate-type

photoinitiator having a residual light absorption of between 200 and 500 nm, the photoinitiator being chosen from those of formula:

5 Δ in which the cationic entity of the borate is selected from the organometallic salts of formula (II) $(L^1 L^2 L^3 M)^{+q}$, in which:

- M represents a group 4 to 10 metal, in particular iron, manganese, chromium or cobalt,
- L¹ represents 1 ligand bound to the metal M by π by electrons, which ligand is chosen from the ligands η³-alkyl, η⁵-cyclopentadienyl and η⁷-cycloheptatrienyl and the η⁶-aromatic compounds chosen from the optionally substituted η⁶-benzene ligands and the compounds having from 2 to 4 condensed rings, each ring being capable of contributing to the valency layer of the metal M by 3 to 8 π electrons;
- L² represents a ligand bound to the metal M by π electrons, which ligand is chosen from the ligands η⁷-cycloheptatrienyl and the η⁶-aromatic compounds chosen from the optionally substituted ligands η⁶-benzene and the compounds having from 2 to 4 condensed rings, each ring being capable of contributing to the valency layer of the metal M by 6 or 7 π electrons;

• L³ represents from 0 to 3 ligands, which are identical or different, linked to the metal M by σ electrons, which ligand(s) is (are) chosen from CO and NO₂⁺; the total electron charge q of the complex to which L¹, L² and L³ contribute and the 5 ionic charge of the metal M being positive and equal to 1 or 2;

Δ and the anionic borate entity of which has the formula [BX_aR_b]⁻ (III) in which:

10 - a and b are integers ranging, for a, from 0 to 3 and, for b, from 1 to 4 with a + b = 4,

- the symbols X represent:

* a halogen atom (chlorine, fluorine) with a = 0 to 3,

15 * an OH functional group with a = 0 to 2,

- the symbols R are identical or different and represent:

➤ a phenyl radical substituted with at least one electron-attracting group such as for example 20 OCF₃, CF₃, NO₂, CN, and/or with at least 2 halogen atoms (fluorine most particularly), this being when the cationic entity is an onium of an element of groups 15 to 17,

➤ a phenyl radical substituted with at least one 25 element or one electron-attracting group, in particular a halogen atom, including fluorine in particular, CF₃, OCF₃, NO₂, CN, this being when the

cationic entity is an organometallic complex of an element of groups 4 to 10,

➤ an aryl radical containing at least two aromatic nuclei such as for example biphenyl, naphthyl, 5 optionally substituted with at least one electron-attracting group or element, in particular a halogen atom (fluorine most particularly), OCF₃, CF₃, NO₂, CN, regardless of the cationic entity.

2. The composition as claimed in claim 1,
10 characterized in that the photoinitiator is chosen from the group consisting of:

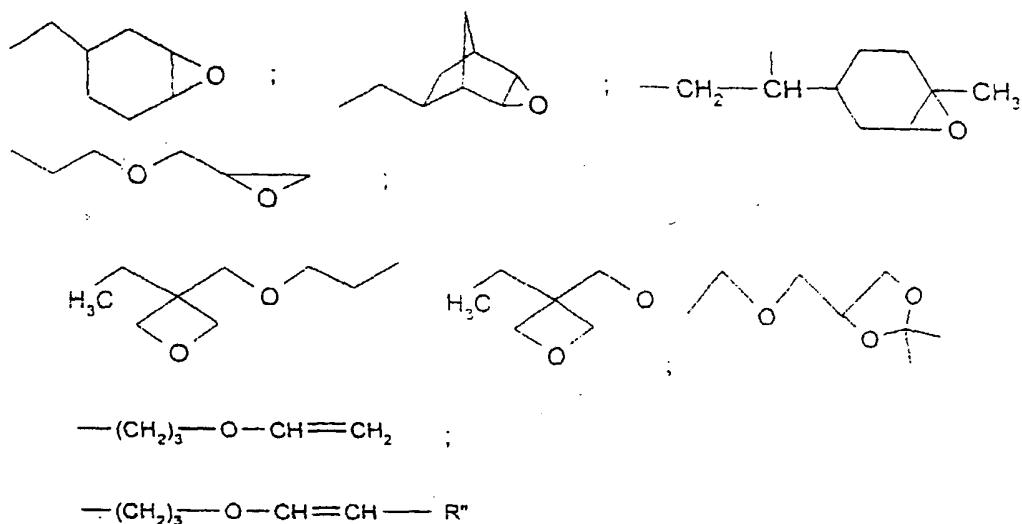
- . (η⁵-cyclopentadienyl) (η⁶-toluene) Fe⁺, [B(C₆F₅)₄]⁻
- . (η⁵-cyclopentadienyl) (η⁶-methyl-1-naphthalene) Fe⁺, [B(C₆F₅)₄]⁻
- 15 . (η⁵-cyclopentadienyl) (η⁶-cumene) Fe⁺, [B(C₆F₅)₄]⁻

3. The composition as claimed in either of claims 1 and 2, characterized in that Z is an organic substituent Z1 comprising at least one reactive epoxy, and/or dioxolane functional group, and preferably at 20 least one reactive epoxy functional group.

4. The composition as claimed in claim 3, characterized in that the oligomer or polymer (1) comprises in addition other reactive functional groups Z such as the reactive alkenyl ether, oxetane and/or 25 carbonate functional groups Z2.

5. The composition as claimed in any one of the preceding claims, characterized in that the

reactive functional group(s) of Z1 are chosen from the following radicals:

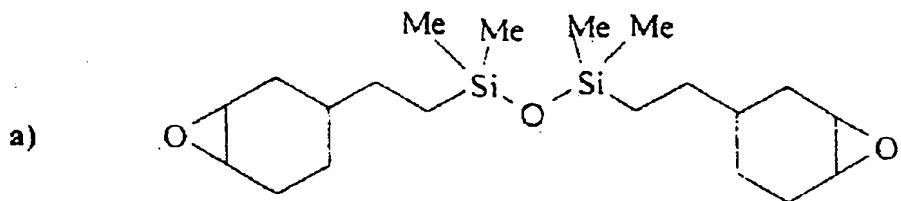


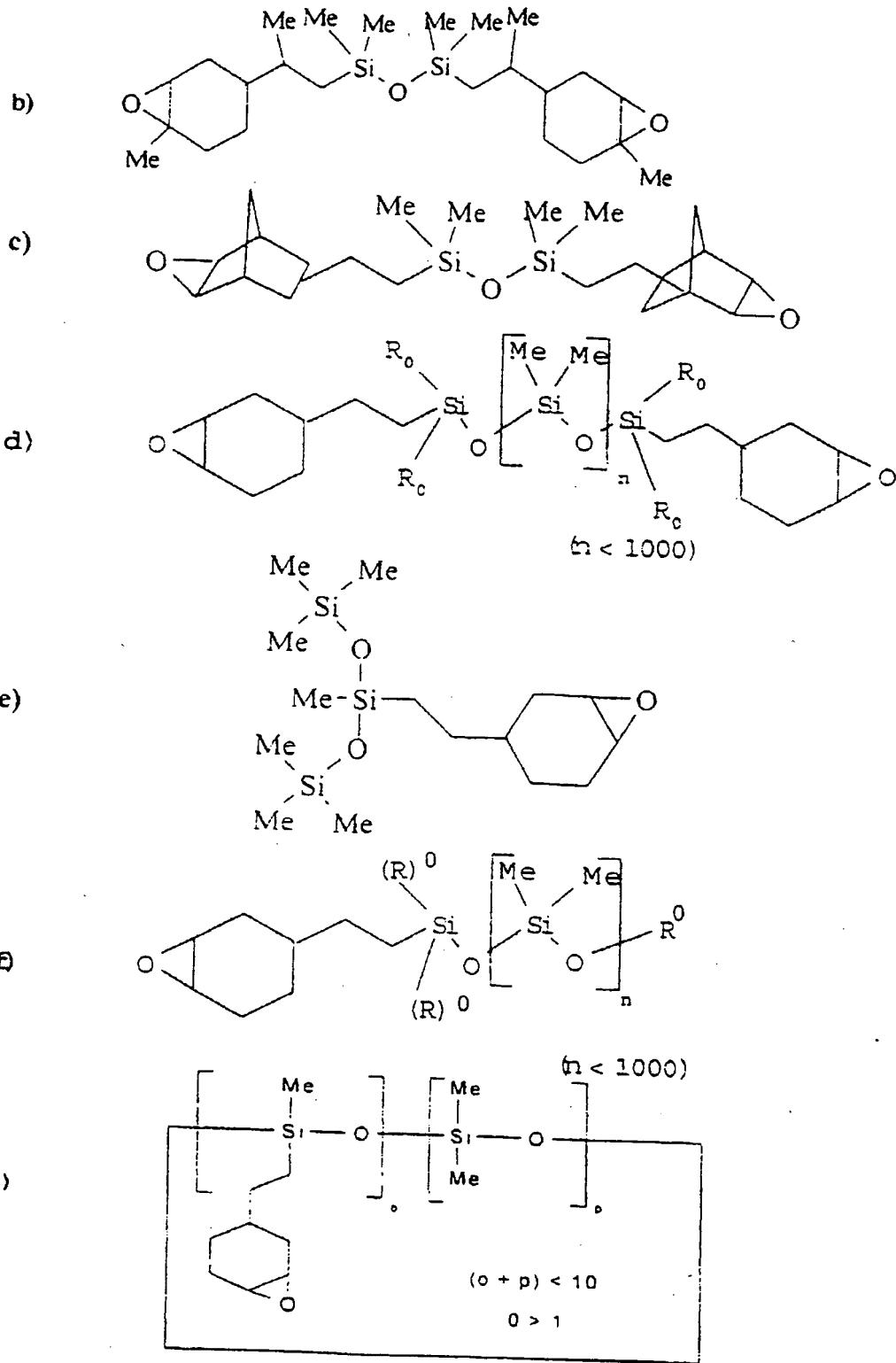
- with R" representing a linear or branched C₁-C₆ alkyl radical.

6. The composition as claimed in any one of the preceding claims, characterized in that the dental composition comprises at least one aromatic hydrocarbon 10 photosensitizer with one or more aromatic nuclei which are substituted or not, having a residual light absorption of between 200 and 500 nm.

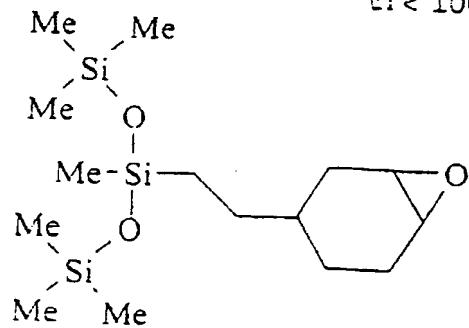
7. The dental composition as claimed in any one of the preceding claims, characterized in that the silicone oligomer and/or polymer consists of at least one polysiloxane having the following average formula:

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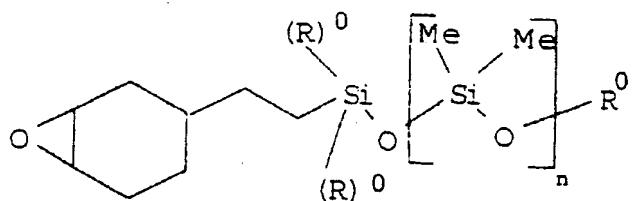




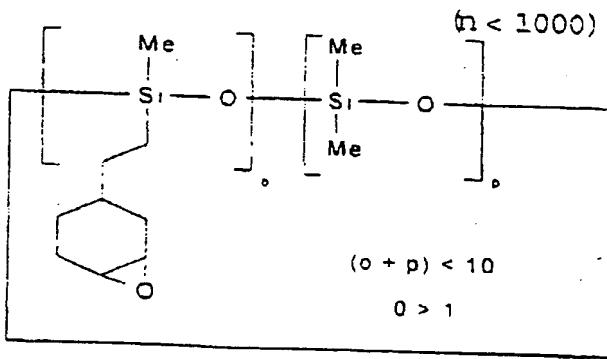
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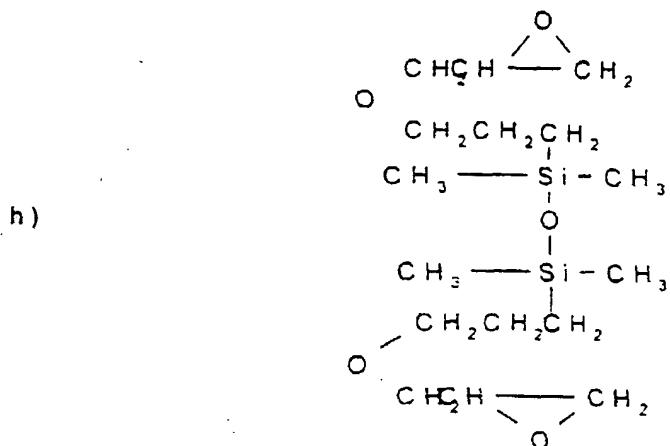


f)



g)





8. The use of a dental composition as
5 claimed in any one of the preceding claims for the
production of dental prostheses.

9. The use of a dental composition as
claimed in any one of claims 1 to 7, for dental
restoration.

10 10. A dental prosthesis which can be
obtained from a composition as claimed in any one of
claims 1 to 7.

11. A dental restoration material which can
be obtained from a composition as claimed in any one of
15 claims 1 to 7.